

WHAT IS CLAIMED IS:

- 1 1. A method of monitoring an element in a computer network, said method
2 comprising:
 - 3 monitoring a preselected variable relating to said element;
 - 4 defining a threshold for the monitored preselected variable;
 - 5 establishing a sliding window in time;
 - 6 repeatedly generating a time above threshold value, said time above threshold value
7 being a measure of an amount of time during which the monitored variable exceeded the
8 threshold during the sliding window of time;
 - 9 detecting when the time above threshold value exceeds a condition window value;
10 and
- 11 in response to detecting when the time above threshold value exceeds said condition
12 window, generating an alarm.
- 1 2. The method of claim 1 further comprising after generating an alarm, maintaining
2 the alarm at least as long as the time above threshold value exceeds a clear window value.
- 1 3. The method of claim 2 wherein said clear window value is equal to said condition
2 window value.
- 1 4. The method of claim 3 further comprising:
 - 2 monitoring a plurality of variables relating to said element, said preselected variable
3 being one of said plurality of variables; and
 - 4 for each of the plurality of monitored variables, defining a corresponding threshold
5 for that other variable, wherein the time above threshold value is a measure of an amount of
6 time during which any one or more of the monitored variables exceeded its corresponding
7 threshold during the corresponding sliding window of time.
- 1 5. The method of claim 1 wherein the step of defining the threshold for the
2 preselected variable comprises:
 - 3 computing an average value for the preselected variable based on values obtained for
4 the preselected variable over a corresponding prior period;

5 defining an excursion amount; and
6 setting the threshold equal to a sum of the average value plus the excursion amount.

1 6. The method of claim 5 wherein the corresponding period of time is less than a day.

1 7. The method of claim 6 wherein the corresponding period of time is a particular
2 hour period of a day.

1 8. The method of claim 6 wherein the step of computing the average comprises
2 computing a mean value for the preselected variable using values obtained for that
3 preselected variable for the same hour period of the same day of the week for a
4 predetermined number of previous weeks.

1 9. The method of claim 5 wherein the step of defining an excursion amount
2 comprises:

3 computing a standard deviation for the preselected variable based on values obtained
4 for the preselected variable over a predetermined period of time; and

5 setting the excursion amount equal to K times the computed standard deviation,
6 wherein K is a positive number.

1 10. The method of claim 9 wherein the step of computing the standard deviation
2 comprises computing the standard deviation using values obtained for that preselected
3 variable for the same hour period of the same day of the week for a predetermined number of
4 previous weeks.

1 11. The method of claim 1 wherein the step of defining the threshold for the
2 preselected variable comprises:

3 defining an excursion amount; and

4 setting the threshold equal to H less the excursion amount, where H is a positive
5 number.

1 12. The method of claim 11 wherein the step of defining an excursion amount
2 comprises:

3 computing a standard deviation for the preselected variable based on values obtained
4 for the preselected variable over a predetermined period of time; and
5 setting the excursion amount equal to K times the computed standard deviation,
6 wherein K is a positive number.

1 13. A method of monitoring an element in a computer network, said method
2 comprising:

3 defining a profile for that element, said profile including a plurality of different alarm
4 rules, each of said different alarm rules establishing an alarm test for a corresponding one or
5 more variables;

6 detecting when the alarm test for any one or more of the plurality of different alarm
7 rules is met;

8 repeatedly generating a time above threshold value, said time above threshold value
9 being a measure of an amount of time during which any one or more of the alarm tests has
10 been met during a preselected prior window of time;

11 detecting when the time above threshold value exceeds a condition window value;
12 and

13 in response to detecting when the time above threshold value exceeds said condition
14 window, generating an alarm.

1 14. The method of claim 13 further comprising after generating an exception,
2 maintaining that exception at least as long as the time above threshold value exceeds a clear
3 window value.

1 15. A method of displaying on a computer display screen historical performance of
2 an element on a network, said method comprising:

3 monitoring performance of the element;
4 for each of the plurality of time slots, deriving a measure of performance for the
5 element from its monitored performance;

6 for each of a plurality of time slots, computing an average value for the measure of
7 performance of the element;

8 for each of the plurality of time slots, computing a variability for the measure of
9 performance; and

10 on the computer display screen and for each of the plurality of time slots: (1)
11 displaying a first indicator of the computed average value for that time slot; (2) a second
12 indicator of the computed variability for that time slot; and (3) a third indicator of the derived
13 measure of performance for that time slot.

1 16. A computer program stored on a computer-readable medium for causing a
2 computer system to perform the functions of:

3 monitoring a preselected variable relating to an element of a computer network;
4 defining a threshold for the monitored preselected variable;
5 establishing a sliding window in time;
6 repeatedly generating a time above threshold value, said time above threshold value
7 being a measure of an amount of time during which the monitored variable exceeded the
8 threshold during the sliding window of time;

9 detecting when the time above threshold value exceeds a condition window value;
10 and

11 in response to detecting when the time above threshold value exceeds said condition
12 window, generating an alarm.

1 17. A computer program for monitoring an element in a computer network, said
2 program stored on a computer-readable medium for causing a computer system to perform
3 the functions of:

4 defining a profile for that element, said profile including a plurality of different alarm
5 rules, each of said different alarm rules establishing an alarm test for a corresponding one or
6 more variables;

7 detecting when the alarm test for any one or more of the plurality of different alarm
8 rules is met;

9 repeatedly generating a time above threshold value, said time above threshold value
10 being a measure of an amount of time during which any one or more of the alarm tests has
11 been met during a preselected prior window of time;

12 detecting when the time above threshold value exceeds a condition window value;
13 and

14 in response to detecting when the time above threshold value exceeds said condition
15 window, generating an alarm.

1 18. A computer program for displaying on a computer display screen historical
2 performance of an element on a network, said program stored on a computer-readable
3 medium for causing a computer system to perform the functions of:
4 monitoring performance of the element;
5 for each of the plurality of time slots, deriving a measure of performance for the
6 element from its monitored performance;
7 for each of a plurality of time slots, computing an average value for the measure of
8 performance of the element;
9 for each of the plurality of time slots, computing a variability for the measure of
10 performance; and

11 on the computer display screen and for each of the plurality of time slots: (1)
12 displaying a first indicator of the computed average value for that time slot; (2) a second
13 indicator of the computed variability for that time slot; and (3) a third indicator of the derived
14 measure of performance for that time slot.